## REMARKS

The present application was filed on July 13, 2000 with claims 1-22. Claims 1, 11, 21 and 22 are the independent claims. In the outstanding Office Action, the Examiner: (i) objected to FIGs. 1 and 2; (ii) rejected claims 1, 6-8, 11, 16-18, 21 and 22 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,604,494 to Murakami et al. (hereinafter "Murakami"); (iii) rejected claims 9, 10, 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over Murakami; and (iv) indicated allowable subject matter in claims 2-5 and 12-15.

Applicants have amended FIGs. 1 and 2, as suggested by the Examiner, to include a "Prior Art" label. A marked-up copy of FIGs. 1 and 2 are attached herewith. Approval of the change and withdrawal of the objection are respectfully requested.

Applicants gratefully acknowledge the indication of allowable subject matter in claims 2-5 and 12-15.

Regarding the §102(b) rejection of claims 1, 6-8, 11, 16-18, 21 and 22, Applicants respectfully assert that Murakami fails to teach or suggest all of the limitations in claims 1, 6-8, 11, 16-18, 21 and 22 for at least the reasons presented below.

It is well-established law that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Applicants assert that the rejection based on Murakami does not meet this basic legal requirement, as will be explained below.

The present invention, for example, as recited in independent claim 1, recites a method for use in a block transform-based decoder, the decoder receiving a signal generated by a block transform-based encoder, the signal representing one or more quantized coefficients associated with at least one block of visual data, and the decoder decoding the signal to yield a decoded visual data block, comprising the steps of: (i) transforming the decoded visual data block to yield a transformed data block; and (ii) applying a constrained quantization and inverse quantization operation to the transformed data block, the constrained quantization operation being conditioned on a comparison of the signal received by the decoder to the transformed data block, the constrained quantization and inverse quantization operation yielding a partially decoded output signal. Independent claims 11, 21 and 22 recite similar limitations.

By way of example, the present specification beginning at page 7, line 24, states:

We now explain the operation performed on the transformed coefficients in each constrained quantization and inverse quantization module 410 of the blocks of the decoder 400. Let $x(n)$ be the input to the decoder (quantized coefficients in the transform domain from an encoder such as is shown in FIG. 1), where $n = 0,1,...,63$, for an 8 x 8 block of data. As can be seen in FIG. 4, $x(n)$ is available to each constrained quantization and inverse quantization module 410 of the decoder as a reference signal. If $y_k(n)$ is the output of a Hadamard transform module 408 at any stage $k$, $k = 1, 2,..., N$, then the constrained quantization and inverse quantization operation performed on $y_k(n)$ yields $z_k(n)$ according to the following rule:

$$\begin{aligned} z_k(n) &= y_k(n) && \text{if } Q(y_k(n)) = x(n) \\ &= x(n) * q && \text{if } Q(y_k(n)) \neq x(n) \end{aligned}$$

where $q$ is the quantization step size used for the current block, and $Q(y_k(n))$ represents the quantized value of $y_k(n)$. Thus, $x(n)$ is the constraint or reference against which the quantization of the output $y_k(n)$ of module 408 is performed in module 410. In the absence of concatenated coding loss, i.e., if there is no new error introduced after clipping (module 406) the output of the inverse Hadamard transform (module 404) to 10 bits, then $y_k(n) = x(n) * q$ and $z_k(n) = y_k(n)$. Under the presence of concatenated coding loss however, $y_k(n) \neq x(n) * q$, and two situations arise. If $Q(y_k(n)) = x(n)$, then module 410 does not perform any quantization, and its output $z_k(n) = y_k(n)$. But in the case when $Q(y_k(n)) \neq x(n)$, the output $z_k(n)$ of module 410 is set to $x(n)$, i.e., $z_k(n) = x(n) * q$.

Let us consider a simple example to explain the above situation. Let the quantization parameter be $q = 5$, and let the reference signal be $x(n) = 3$. Then, three situations may arise. In the absence of concatenated coding loss, the output of the Hadamard transform block, module 408, will be $y_k(n) = 15$, by definition, so that $Q(y_k(n)) = x(n) = 3$ and the output of module 410 would be $z_k(n) = 15$, i.e., $z_k(n) = y_k(n)$. In the second situation, let $y_k(n) = 17$, i.e., concatenated coding loss is present since $y_k(n) \neq x(n) * q$, but $Q(y_k(n)) = x(n) = 3$. In this case, we do not perform any quantization, and the output to module 410 remains identical to its input, i.e., $z_k(n) = 17$. In the third and final situation, let $y_k(n) = 12$, i.e., like in the previous case, there is concatenated coding loss, but also $Q(y_k(n)) = 2$, so that $Q(y_k(n)) \neq x(n)$. In this case, we constrain the output $z_k(n)$ to equal the reference signal, i.e., $z_k(n) = x(n) * q = 15$.

Murakami discloses an encoding/decoding apparatus with a quantizer/inverse quantizer element 112. The Office Action cites column 3, line 40, through column 4, line 24, in support of its rejection, wherein a quantization operation is disclosed.

However, the quantization operation in Murakami is not the same as the constrained quantization operation of the claimed invention. The claimed invention recites a constrained quantization operation which is conditioned on a comparison of the signal received by the decoder

to the transformed data block. Murakami discloses a completely different quantization operation. Despite the contention to the contrary in the Office Action, Murakami fails to teach or suggest a constrained quantization operation which is conditioned on a comparison of the signal received by the decoder to the transformed data block.

The Office Action alleges that, in Murakami, "the quantizations are constrained to the different bit planes." However, Murakami is silent to any constraint condition. Also, there is no comparison of the signal received by the decoder to the transformed data block in Murakami. That is, Murakami is completely silent as to these claimed limitations.

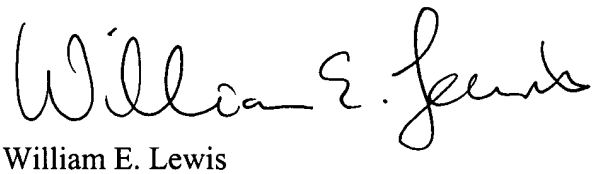
For at least these reasons, Applicants respectfully request withdrawal of the §102(b) rejection of independent claims 1, 11, 21 and 22.

Regarding dependent claims 6-10 and 16-20, Applicants respectfully assert that such claims are patentable over Murakami not only due to their respective dependence on claims 1 and 11, but also because such claims recite patentable subject matter in their own right.

For at least these reasons, Applicants respectfully request withdrawal of the §102(b) rejection of claims 6-8 and 16-18, and the §103(a) rejection of claims 9, 10, 19 and 20. Applicants also challenge the taking of Official Notice since it must be shown that there is proper motivation in a reference teaching Hadamard transforms to combine it with Murakami in order to achieve the claimed invention.

In view of the above, Applicants believe that claims 1-22 are in condition for allowance, and respectfully request favorable reconsideration.

Respectfully submitted,



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